Three Clear-Deck Landings in One

by Lt. John Bushey

"Flight quarters, flight quarters! All hands man your flight-quarters stations." My pulse quickened as I made final preparations for the upcoming recovery, hot-pump, crew swap, and relaunch of Hellfire 16, our det's SH-60B.

It was my fourth flight as HAC. My crew consisted of a junior pilot qualified in model (PQM) and our detachment's junior aircrewman. We had briefed an hour-and-a-half earlier in CIC. The mission that night was surface surveillance (SSC) and mission-training quals. We were supposed to proceed down PIM and evaluate all contacts.

Our preflight brief concluded with an aircrew brief, review of the aircraft ADB, and completion of the operational risk management (ORM) form. A weather brief was not available, but PIREPS indicated 500-foot ceilings and one-mile visibility—minimums for shipboard ops. Our ORM number was high.

Finishing my walk-around, I strapped into the seat and keyed the ICS, "How's it going?"

Our OinC (the off-going HAC), replied, "Great. The aircraft's flying well, no problems. Our fuel burn was averaging around 840 pounds per hour." After getting the lowdown on the aircraft and the tactical update, we completed the turnover and prepared for launch.

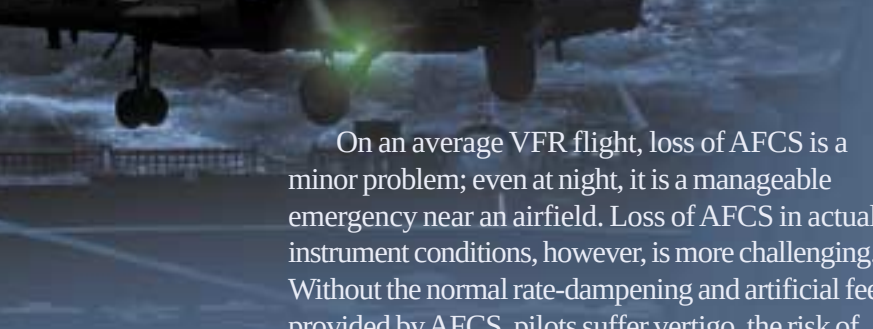
We made an instrument takeoff into the velvet-black night with six-foot seas gently rocking home plate's flight deck. We established Hawklink and proceeded toward our computer-generated fly-to point, 64 miles ahead of PIM. My copilot, tonight flying as airborne tactical officer (ATO), and sensor operator (SO) began routine radar, ESM and FLIR searches. As the squadron's newest aircraft, and one modified with a rapid-deployment kit, "Sweet" 16 had a reputation as the smoothest helo we had. Tonight, it was flying exactly as advertised.

The flight quickly developed into the normal bore-ex of routine SSC. Suddenly, the master-caution light illuminated. I glanced at the caution-advisory panel and saw the AFCS-Degraded and SAS cubes glaring brightly. This time, though, the AFCS-Degraded light was different; the light didn't blink.

The steady AFCS-Degraded caution light indicated a complete power interruption to the automatic flight-control system (AFCS) computer. I scanned the AFCS control panel to find that the SAS1, SAS2, trim, autopilot, and computer power push-button switches no longer were on. At the same time, the controls had become as fluid as a mop in a bucket of water. All trim, dampening, attitude retention and altitude hold—the "magic" provided by AFCS—were gone. We were 50 miles from the boat in IMC at night, with more than 3,000 pounds of hydraulic pressure moving the control surfaces in response to every input. To say the aircraft was squirrelly would be an understatement.

We immediately pulled power to get away from the water. The ATO broke out his pocket checklist and reviewed the procedures. We tried recycling computer power and checked circuit breakers, all without success. The SO had grabbed the aircraft NATOPS and was reviewing it for any other possible actions to get the computer back online. He read the AFCS failure matrix and confirmed that the steady AFCS-Degraded light indicated a total loss of power to the computer.

I handed controls over to the ATO and took the checklist to review the emergency procedures myself. Nothing in it or NATOPS worked; we were stuck.



On an average VFR flight, loss of AFCS is a minor problem; even at night, it is a manageable emergency near an airfield. Loss of AFCS in actual instrument conditions, however, is more challenging. Without the normal rate-dampening and artificial feel provided by AFCS, pilots suffer vertigo, the risk of controlled flight into terrain is magnified, and you can easily get into unrecoverable, unusual attitudes. Once we got the aircraft under control and away from the water, we contacted the ship and asked to speak with the OinC.

We briefed him on the AFCS failure and our troubleshooting. He offered several other avenues to explore, but none of them worked. We were out of range of an alternate landing site ashore and the comfortable, big flight deck of an aircraft carrier. Our only remaining option was to bring the aircraft back to the ship. With that, I declared an emergency, and the boss immediately set about coordinating our landing requirements with the ship.

Our only references were dimly illuminated gray bulkheads and greenish-blue alignment

As we tried reversing course and returning home, we got our first indications of how hard the remainder of the flight would be. As we began our turn, an unusual attitude immediately developed. Right wing down and shifting of the lift vector resulted in a descent, the ball went out and airspeed increased. Pulling power to arrest the descent sent the ball out the opposite direction and caused airspeed to decrease.

Seeing the result of our first turn, we quickly re-briefed the emergency and everyone's duties. Any time a new heading, altitude or airspeed was selected, all crew members monitored the aircraft's progress. The SO monitored the radar altimeter and airspeed displayed on the navigation parameters table of the tactical computer, immediately reporting any deviations from our briefed flight attitude.

The pilots swapped controls whenever fatigue set in. One monitored instruments, backed up the flying pilot, did all checklists, and responded to radio calls. The tactical screen was selected on the ATO's multipurpose display to assist in navigational orientation. Maximum crew coordination became the critical factor that would bring us home.

As we plodded toward the ship, pilot fatigue became evident. Maintaining wings straight and level, altitude and airspeed was hard. Turns or changes in altitude and airspeed bordered on unusual attitude recoveries. We were not looking forward to landing our testy helo on a small flight deck just 33 feet above the water. Thank goodness we weren't landing on a frigate!

As we approached the ship, we decided to descend from 1,000 feet to 500 feet. The ship was now 10 miles away. As the pilot lowered collective, the ball went out again. When we leveled off at 500 feet, we realized we had turned off the ship's base-recovery course. We tried turning back to the ship, but stopped after the pilot at the controls began to chase altitude. We decided to fly straight and level for a while and repositioned for another approach.

The OinC had coordinated the recovery to give us the most stable deck possible, with winds from port. We completed the landing checklist, then briefed our approach and landing. We decided to try the alternate approach beginning two miles astern at 200 feet. The advantage of this approach was that it required minimal altitude and airspeed changes, compared to the standard LAMPS step-down approach beginning 1.2 miles astern at 400 feet.

We also requested a clear-deck recovery, instead of a free-deck landing to reduce the amount of time we would be hovering over the flight deck, as crew fatigue was rapidly becoming a critical factor.

About five miles out, we descended to 200 feet. We began the approach. My copilot had been flying up to this point and was tired. We decided to swap controls. Just before the change, we again reviewed crew responsibilities and the importance of everyone scanning their instruments. We hit two miles and began the approach with a gradual descent to 100 feet. At about one mile, we leveled off and slowed to 50 knots. My copilot and SO were backing me up on headings and altitude, as well as closure to the ship.

Just inside a mile, the ship began to break out of the black night. At a quarter mile, we were able to begin picking out the individual landing aids and the SGSI. We stayed at 100 feet and slowed to

about 20 knots of closure. Now with an external orientation, everyone on board realized how much the nose was dancing left and right, up and down as we moved the flight controls.

I called that we were about 500 yards astern to the SO. He rogered and continued with his altitude and closure calls.

As we crossed the cruiser's gun and missile decks, I slowed the aircraft to a crawl. I did not want to charge over the flight deck and have to make a large control input, only to lose sight of the deck.

"You've got the deck made," my copilot called. I crept forward a little more to get the aircraft in the landing circle. We were now visual; our only references were dimly illuminated gray bulkheads and greenish-blue alignment lines. I was quickly scanning the line-up lines and the butt lines for orientation as my copilot and SO assisted with lineup calls. The ship appeared to pitch and roll at an incredible rate as I fought to align the aircraft over the tiny flight deck.

The horizontal reference bar mounted above the hangar door was of little assistance once we descended over the landing area.

The ATO and SO continued their lineup calls, "Forward three. Right two. Forward half."

I finally found the correct lineup and set the aircraft down. I looked over and saw that my copilot had ridden the controls for the landing. The Homer Simpson "woo hoos" of exuberance broke out in the cockpit as the mechs applied chocks and chains.

After shutdown, our flight crew debriefed the flight over a cup of cappuccino in the ward-room. We were tired and wired at the same time from the adrenaline rush of the flight and caf-feine. Every member of the crew flew the aircraft that night. Good crew coordination had brought us home. The NAVFLIR for that flight reflects one landing for each of the three crew members.

Lt. Bushey flies with HSL-51's Det 2.

On Cat 1

Coming Attractions for August